McLaren Hart

November 4, 1991

Mr. Kwang Lee
California Regional Water Quality Control Board-
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, California 91754-2156

Dear Mr. Lee:

INVESTIGATION SUMMARY AND TRANSMITTAL OF ADDITIONAL SOIL AND GROUNDWATER INVESTIGATION REPORTS, PILOT CHEMICAL COMPANY, SANTA FE SPRINGS, CALIFORNIA

Enclosed are copies of two investigation reports which were recently completed for the Pilot Chemical Company Santa Fe Springs facility. These reports are:

"Final Report, Additional Subsurface Soil and Groundwater Assessment, Pilot Chemical Company Facility, Santa Fe Springs, California", report prepared by Kleinfelder, Inc., dated July 1991.

"Subsurface Soil Investigation at the Former Underground Storage Tank Location, Pilot Chemical Company Santa Fe Springs, California", report prepared by McLaren/Hart, dated October 1991.

Both of these reports pertain to the characterization of soil and/or groundwater conditions beneath five former underground storage tanks which were removed in November 1990. Soil analytical data collected as part of the tank removals indicated the presence of toluene, ethylbenzene and xylenes beneath one of the tanks and a portion of an adjacent tank at elevated concentrations (greater than 1,000 ppm combined total).

The soil and groundwater investigation conducted by Kleinfelder was performed consistent with a workplan approved by the Regional Water Quality Control Board (RWQCB). The investigation conducted by McLaren/Hart was performed without prior notification to the RWQCB. This investigation was performed in part to evaluate soil conditions beneath a proposed building which is to be located southeast the former underground storage tanks.

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SUMMARY OF RECENT INVESTIGATION FINDINGS

Kleinfelder Investigation

The investigation performed by Kleinfelder involved:

- drilling, soil sampling and construction of seven groundwater monitoring wells
- analysis of selected soil samples for total petroleum hydrocarbon (TPH) concentration by modified EPA Method 8015 and aromatic volatile organic compounds (VOCs) by EPA Method 8020
- groundwater elevation monitoring and collection of one round of groundwater samples from all of the existing and newly constructed wells, except one well (EW-4); groundwater samples were analyzed for pH by EPA Method 9040, surfactants by EPA Method 425.1 and aromatic VOCs by EPA Method 8020

Prior to this investigation, four groundwater monitoring wells had been constructed by Clayton Environmental Consultants (MW-1, through MW-3 and EW-4). The seven wells constructed by Kleinfelder were identified as MW-5 through MW-11. All of the Kleinfelder wells were drilled to depths of 75 to 78 feet below ground surface and screened with 20 feet of 0.020 inch slotted casing. The top of the screened interval extended approximately five feet above the top of the saturated zone. A map of the Pilot Chemical facility showing the locations of the groundwater monitoring wells is shown on Figure 1. For reference purposes, the former underground tank farm is located south of MW-7 between MW-8 and MW-1.

Findings from the Kleinfelder investigation indicate the following:

- soil materials encountered during the drilling of the wells can be generalized as follows:
  - 0 to 30 feet interbedded silty sand and sand
  - 30 to 55 feet interbedded clay and silt
  - 55 to 75 feet interbedded sand and gravel
- saturated soil conditions are encountered at an approximate depth of 55 feet below ground surface; static water rises to approximately 47 feet below ground
- groundwater flow is in a southwesterly direction; the groundwater gradient is 0.005 feet/foot

- soil samples were analyzed from each boring at 10-foot intervals starting at a depth of 10 feet; analytical data indicate the following:

  - petroleum hydrocarbon compounds are present in several of the soil samples collected and analyzed; none of the samples had a total petroleum hydrocarbon (TPH) concentration greater than 60 ppm, with the exception of MW-8, which was drilled adjacent to the former underground tank farm

  - aromatic VOCs were detected in many of the samples in which TPH was detected; the detected compounds were toluene, ethylbenzene and xylenes; no benzene was detected; concentrations for the detected constituents were generally less than 1 ppm, with the exception of the samples from MW-8

  - data from MW-8 indicate non-detectable TPH concentrations (detection limit 5 ppm) in soil samples collected at 10, 20 and 30 feet; a TPH concentration of 29 ppm and 4,700 ppm are detected at depths of 40 and 50 feet, respectively

  - data from MW-8 further indicate non-detectable to less than 0.1 ppm aromatic VOCs in the soil samples collected at 10, 20 and 30 feet; total aromatic VOC concentrations at 40 and 50 feet are 182 ppm and 1,700 ppm, respectively

- groundwater analytical data indicate the following:

  - the pH of all samples ranges from 7.17 to 7.54

  - surfactants are detected in seven of the 11 wells; the detected concentrations range from 0.1 to 2.2 ppm

  - aromatic VOCs were detected in all of the wells at trace to elevated concentrations (above State Action Levels); the detected compounds include benzene, toluene, ethylbenzene and xylenes

  - analytical data from three wells located in the vicinity and immediately downgradient of the former tank farm (MW-1, MW-2, MW-3) show elevated concentrations of toluene, ethylbenzene and xylenes; analytical data from MW-8 indicate the presence of toluene at elevated concentrations, detected ethylbenzene and xylene concentrations in this well are below State Action Levels

- analytical data from upgradient wells MW-5 and MW-6 indicate the presence of non-detectable to trace concentrations of toluene, ethylbenzene and xylenes

- analytical data from downgradient well MW-9 indicate the presence of trace to low concentrations of toluene, ethylbenzene and xylenes, all of which are below the State Action Levels

- benzene is detected in the two upgradient wells (MW-5 and MW-6) and downgradient well MW-9 at concentrations ranging from 0.61 ppb to 4.8 ppb; all of these wells are located along the western property line of the facility

McLaren/Hart Investigation

The investigation performed by McLaren/Hart involved the drilling and soil sampling of 10 soil borings. Each of these borings were drilled to a depth of 56 feet below ground surface and analyzed for volatile aromatic hydrocarbon compounds by EPA Method 8020. The purpose and rationale for placement of the borings were to:

- complete the characterization of soil conditions in the vicinity of the former underground tanks
- investigate soil conditions beneath a proposed facility building which is to be located approximately 25 to 50 feet southeast of the former underground tank farm

An additional purpose of the investigation was to install two vadose zone, soil vapor extraction wells, in the immediate vicinity of the former underground tanks. Locations of the McLaren/Hart borings and vapor extraction wells, the former underground tanks and the planned facility building are shown on Figure 2. The soil borings drilled by McLaren/Hart are identified as SB-5 through SB-12, EW-3 and EW-4. EW-3 and EW-4 are the vapor extraction wells.

The vapor extraction wells as indicated on this figure are located in the immediate vicinity of former underground tank T 10. Each well is screened from a depth of 5 to 35 feet below ground surface. Design of the vapor extraction wells is based on soil permeability data presented in the initial report prepared by Clayton Environmental and soil lithologic data obtained during of the drilling of these wells.

Findings from the McLaren/Hart investigation indicate the following:

- soil lithologic data are consistent with prior data and indicate the presence of sand and silty sand to a depth of 30 to 35 feet; clayey and silty soil underlie the sand and extend to the bottom of each of the borings (56 feet)

- groundwater was not encountered during the drilling of any of the soil borings or vapor extraction wells

- soil samples were analyzed from each boring at 5 to 10 foot intervals; analytical data indicate the following:

  - aromatic VOCs are detected in most of the borings; the primary constituents detected are toluene, ethylbenzene and xylenes; benzene was detected in two samples at concentrations of 0.14 ppm and 0.007 ppm and are considered suspect

  - soil analytical data are generally consistent with prior data and indicate that aromatic VOCs are present in the immediate vicinity of, and outward from the former underground tanks; data indicate that the distribution of aromatic VOCs is highly influenced by site geologic conditions

  - data from EW-3 and EW-4, which were drilled adjacent to T-10, indicate that aromatic VOCs extend from a shallow depth to the bottom of the borings; the highest detected concentrations are encountered in the sandy soils which are present above a depth of 35 feet

  - data from borings which were drilled outward from the former underground tank farm show the greatest aromatic VOC concentrations are at depths of 36 to 51 feet and are present within the clayey and silty soils which underlie the surficial sand/silty sand unit

  - data indicate that chemical compounds from the area of T-10 have migrated vertically downward as a column, the chemicals then spread laterally along the sand/clay interface; the presence of aromatic VOCs throughout the underlying clay and silt suggests that the clay and silt do not occur as distinct laterally continuous beds, but are interlensing with one another

  - three soil borings were drilled in the area of the planned building (SB-9, SB-10 and SB-11); analytical data from these borings indicate non-detectable to trace concentrations of aromatic VOCs are present from the ground surface to a depth of 50 feet; the maximum total aromatic VOC concentration detected within this interval is 0.29 ppm; data indicate that below 50 feet the concentration of aromatic VOCs increases

RECOMMENDED ACTIONS

Based on findings from these investigations, the extent of aromatic VOCs in soil beneath and in the general vicinity of the former underground tanks is defined. Based on the groundwater flow direction and water quality data, the extent of these compounds is essentially defined. It is recommended that:

- future groundwater investigations be limited to monitoring and sampling; no additional wells are recommended at this time; the additional data will provide a basis for evaluating whether additional wells are necessary and for development of a remedial action plan for cleanup of the groundwater

- a remedial action plan for remediation of the aromatic VOCs in the soil should be developed; based on the lithology, the chemical compounds of interest and the distribution of these compounds beneath the site, it is recommended that remediation be performed by vapor extraction and limited to the upper sand unit; remediation of the underlying clayey soil may not be possible

- no remedial action be required for cleanup of the aromatic VOCs which are detected in the clayey soils below a depth of 50 feet in the three borings drilled in the area of the planned building

Pilot Chemical would like to arrange a meeting with you to discuss the findings from these investigations and the implementation of a soil remedial action plan. They would also like to receive your concurrence that no additional investigation or remediation is required in the vicinity of the planned building. The City of Santa Fe Springs will not issue a building permit until written authorization is received.

Should you have any questions regarding this letter or the attached reports, please do not hesitate to call Bruce Ehleringer or Craig Stolz of McLaren/Hart at (714) 756-2667 or David Nusser of Pilot Chemical Company at (213) 723-0037. We will call you on November 8, 1991, to arrange a meeting with you.

Sincerely yours,

Craig Stolz for
Bruce E. Ehleringer, C.E.G.
Principal Hydrogeologist

Craig Stolz
Craig Stolz
Senior Engineer

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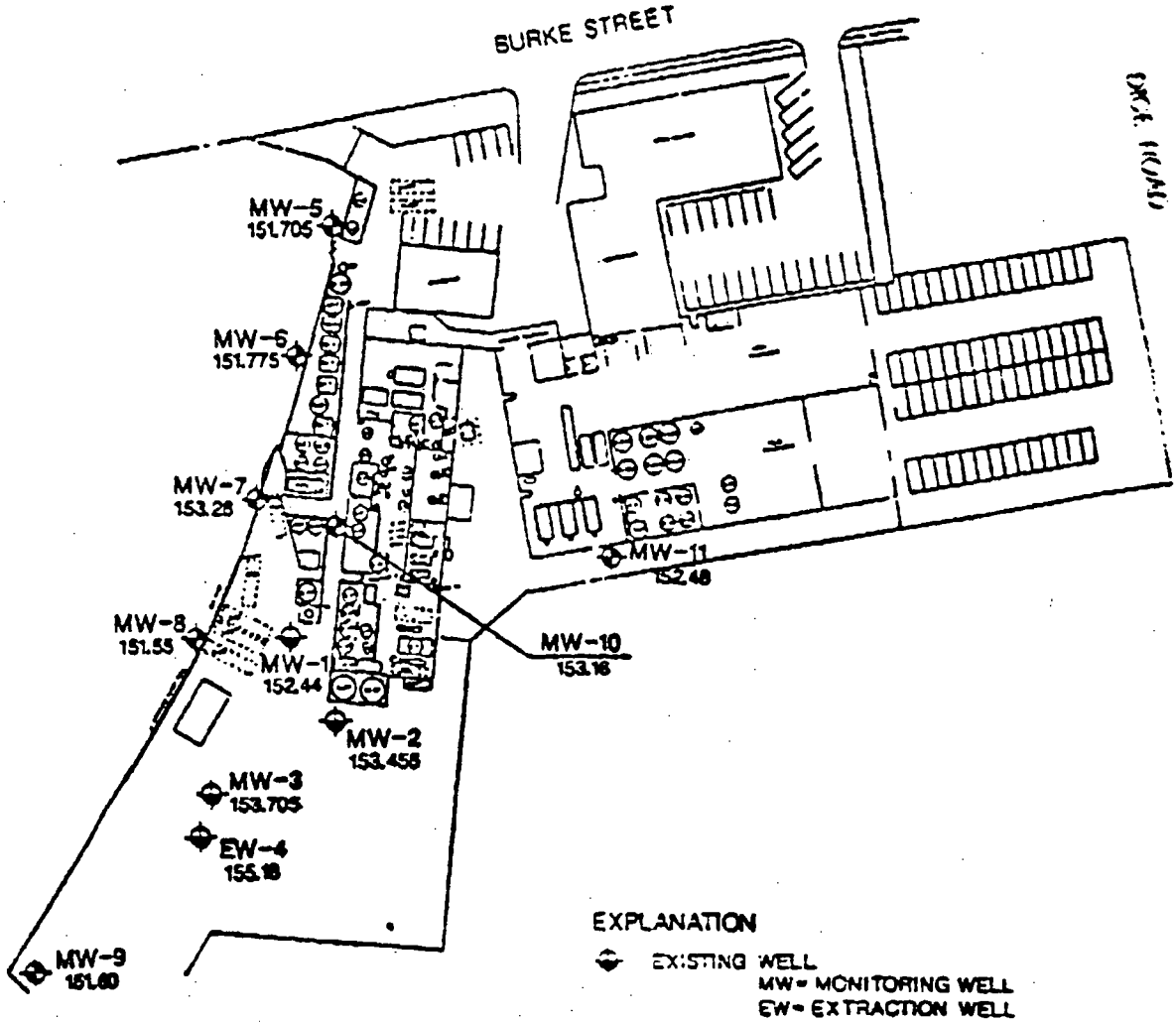
McLaren Hart



ERM ROSENFELDER	PILOT CHEMICAL COMPANY Santa Fe Springs, California Project: 50-2219-02 July 1991	SITE MAP WITH GROUNDWATER MONITORING WELL LOCATIONS	FIGURE 1

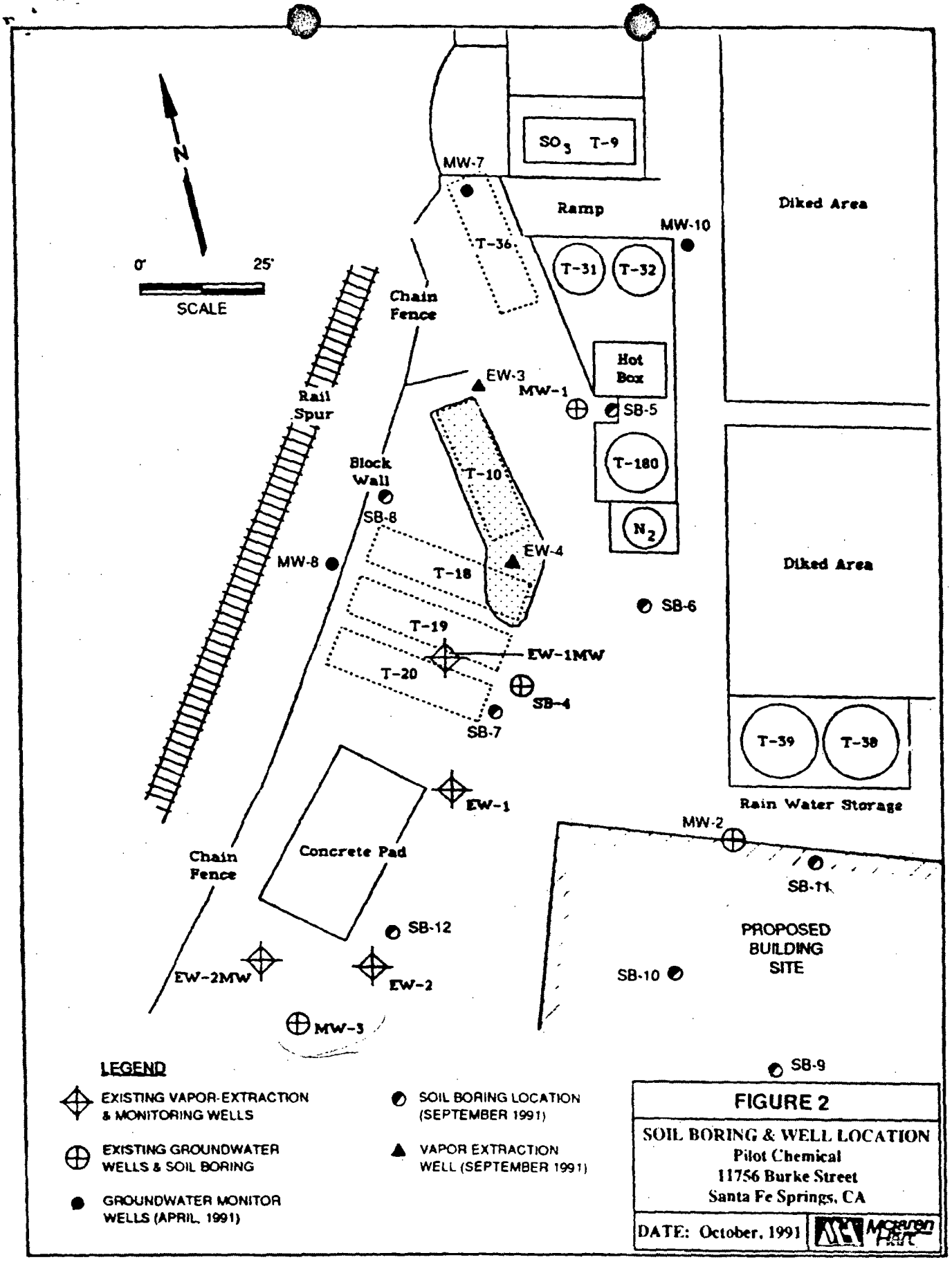


FIGURE 2

SOIL BORING & WELL LOCATION
Pilot Chemical
11756 Burke Street
Santa Fe Springs, CA

DATE: October, 1991